Engineering Advances for Agriculture and Food

Proceedings of the 1938–1988
Jubilee Conference of the
Institution of Agricultural Engineers
Co-sponsored by the Fellowship of Engineering
Robinson College, Cambridge
12–15 September 1988

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ANAEROBIC DIGESTION OF PIGGERY WASTE

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SUMMARY

In connection with the energetic use of piggery waste, fixed-bed-reactors or sludge-blanket-systems are working more economically than conventional biogasplants.

The hydraulic retention time can be decreased and the reliability of the anaerobic process will keep well-balanced when usual load changes occur. To guarantee a secure process, it is necessary to separate the coarse solids. The reduction of methane yield is acceptable.

SCOPE OF WORK

Very often conventional biogasplants are not working economically. Therefore the development of high-efficient plants with a low technical and operational expenditure is indispensable. Digesters according the system of biomass retention have proved true for waste water treatment. In adapted mode they could also be suitable for liquid manure treatment.

Different types of pilot scale digesters in parallel runs have been investigated. Good results were achieved with sludge-blanket-reactors and fixed-bed reactors with artificial support material. The reactors have been operated at a hydraulic retention time of 2 d, which is about 1/5 in comparison to a conventional completely mixed reactor. The fixed-bed-system has shown a better reliability in overcoming usual deviations in load.

As substrate piggery waste from feeding corn was used, the separation of coarse solids of >2 mm size is abolutely necessary to avoid clogging. This results in a reduction in yield of methane of only about 10-20% in comparison to unseparated piggery waste.

CHARACTERISTICS

UASB Reactor		Fixed-bed Reactor	
Volume:	1,2 m^3	Volume:	1,2 m^3
Diameter:	0,6 m	Diameter:	0,6 m
Operating conditions: upflow, continuous feeding		Operating conditions: upflow, continuous feeding	
		Support material : PLASDEK C 10.27	
2 gas separators (at the top and above the lowest third part)		Sepace between plates:	27 mm
		Specific surface:	122 m^2/m^3
		Lacunarity:	96%